

SELF-CLEANING COLLOIDAL SLURRY COMPOSITION AND PROCESS FOR FINISHING A SURFACE OF A SUBSTRATE

Abstract of the Disclosure

5 A self-cleaning colloidal slurry and process for finishing a surface of a glass, ceramic,
glass-ceramic, metal or alloy substrate for use in a data storage device, for example. The slurry
comprises a carrying fluid, colloidal particles, etchant, and a surfactant adsorbed and/or
precipitated onto a surface of the colloidal particles and/or substrate. The surfactant has a
hydrophobic section that forms a steric hindrance barrier and substantially prevents contaminants,
including colloidal particles, from bonding to the substrate surface. The slurry is applied to the
10 surface of the substrate while a pad mechanically rubs the surface. Subsequent cleaning with
standard soap solutions removes substantially all remaining contamination from the substrate
surface. In an exemplary embodiment, the slurry is used to superfinish a glass disk substrate to a
surface roughness of less than 2 Å, with substantially no surface contamination as seen by atomic
force microscopy (AFM) after standard soap cleaning steps.